SALMA

20BCE7605

DSA LAB Assignment - Singly Linked List ~-... Insertion Operations ...-~

19/03/2021

```
  public void addNodeAtTheBeginning(int data)
  {
    Node newNode = new Node(data);

    if (this.head == null)
      {
    this.head = newNode;
      }
    else
      {
    newNode.next = this.head;
    this.head = newNode;
      }
  }

  public void addNodeAtTheEnd(int data)
  {
    Node newNode = new Node (data);
    if (this.head == null)
      {
    this.head = newNode;
      }
    else
      {
    Node current = this.head;
    while (current.next != null)
```

```
public void print()
{
  if (this.head == null)
    {
  System.out.println("Beep. Beep. The List is empty.");
    }
  else
    {
  System.out.println("The Singly Linked List is as follows: ");
  Node current = this.head;
  while (current != null)
    {
      System.out.print(current.data + " -> ");
      current = current.next;
    }
  System.out.println("NULL.\n");
    }
}

public static void main (String[] args)
{
  Insertion list = new Insertion();
  System.out.println("Created a singly linked list...Now, Insertion.");
  list.addNodeAtTheBeginning(30);
  list.print();
```

```
  while (current.next != null)
    {
      current = current.next;
    }
  current.next = newNode;

    }
}

public void add (int pos, int data)
{
  Node newNode = new Node(data);
  Node current = this.head, prev = this.head;

  if (pos == 1)
    {
  newNode.next = head;
  this.head = newNode;
  return;
    }
  while (current.next != null && --pos > 0)
    {
  prev = current;
  current = current.next;
    }
  prev.next = newNode;
```

```
public static void main (String[] args)
{
  Insertion list = new Insertion();
  System.out.println("Created a singly linked list...Now, Insertion.");
  list.addNodeAtTheBeginning(30);
  list.print();
  list.addNodeAtTheBeginning (20);
  list.print();
  list.addNodeAtTheEnd(50);
  list.print();
  list.addNodeAtTheEnd(70);

  list.print();
  list.add(1, 10);
  list.print();
  list.add(4, 40);
  list.print();
  list.add(6, 60);
  list.print();
  System.out.println("~ SALMA (^.^) ");
}
```

Output :

```
Created a singly linked list...Now, Insertion.
The Singly Linked List is as follows:
30 -> NULL.

The Singly Linked List is as follows:
20 -> 30 -> NULL.

The Singly Linked List is as follows:
20 -> 30 -> 50 -> NULL.

The Singly Linked List is as follows:
20 -> 30 -> 50 -> 70 -> NULL.

The Singly Linked List is as follows:
10 -> 20 -> 30 -> 50 -> 70 -> NULL.

The Singly Linked List is as follows:
10 -> 20 -> 30 -> 40 -> 50 -> 70 -> NULL.

The Singly Linked List is as follows:
10 -> 20 -> 30 -> 40 -> 50 -> 60 -> 70 -> NULL.

~ SALMA (^.^)
```

To be noted :

The entire code isn't visible above.

It has been pasted here for ease of reference.

Code :

```
import java.util.*;


public class Insertion
{
  public Node head = null;
  class Node
  {
    private int data;
    private Node next;


    public Node (int data)
    {
      this.data = data;
      this.next = null;
```

```
  }
}

public void addNodeAtTheBeginning(int data)
{
  Node newNode = new Node(data);

  if (this.head == null)
    {
     this.head = newNode;
    }
  else
    {
     newNode.next = this.head;
```

```
    this.head = newNode;
    }
}

public void addNodeAtTheEnd(int data)
{
  Node newNode = new Node (data);
  if (this.head == null)
    {
    this.head = newNode;
    }
  else
    {
    Node current = this.head;
```

```
    while (current.next != null)
      {
        current = current.next;
      }
    current.next = newNode;

   }
}

public void add (int pos, int data)
{
  Node newNode = new Node(data);
  Node current = this.head, prev = this.head;
```

```
    if (pos == 1)
      {
       newNode.next = head;
       this.head = newNode;
       return;
      }
    while (current.next != null && --pos > 0)
      {
       prev = current;
       current = current.next;
      }
    prev.next = newNode;
    newNode.next = current;
  }
```

```
  public void print()
  {
    if (this.head == null)
      {
       System.out.println("Beep. Beep. The List is
empty.");
      }
    else
      {
       System.out.println("The Singly Linked List is
as follows: ");
       Node current = this.head;
       while (current != null)
```

```
        {
          System.out.print(current.data + " -> ");
          current = current.next;
        }
       System.out.println("NULL.\n");
      }
  }

  public static void main (String[] args)
  {
    Insertion list = new Insertion();
    System.out.println("Created a singly linked
list...Now, Insertion.");
    list.addNodeAtTheBeginning(30);
```

```
list.print();

list.addNodeAtTheBeginning (20);

list.print();

list.addNodeAtTheEnd(50);

list.print();

list.addNodeAtTheEnd(70);


list.print();

list.add(1, 10);

list.print();

list.add(4, 40);

list.print();

list.add(6, 60);

list.print();
```

```
        System.out.println("~ SALMA (^.^) ");
    }
}
```